2005 Annual Drinking Water Report

Wisconsin's Public Water Systems

November 2006

WISCONSIN
DEPT. OF NATURAL RESOURCES

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Wisconsin and the United States enjoy some of the cleanest drinking water in the world. For less than the cost of a cup of coffee or a bottle of water, a family of four can enjoy all the clean water they need for a day. That's 220 gallons at an average daily cost of 26 to 35 cents.

Learn more inside.

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Executive Summary

Wisconsin, like the United States in general, enjoys some of the cleanest drinking water in the world. It's a reflection of the state's glacial legacy of abundant fresh water, strong state and federal regulations, and the cooperative efforts of water systems, trade associations, individual operators, and Department of Natural Resources staff. Wisconsin has nearly 11,500 public water systems, which DNR oversees and which meet the daily water needs of about 4 million people. Public water systems are those which serve at least 25 people at least 60 days a year and range from small restaurants and motels up to the state's largest cities.

- **Overall, Wisconsin residents receive safe, high quality water. In 2005, more than 96 percent of public water systems served water that met all state and federal health-based drinking water standards, the most important indicator.**

- Wisconsin's compliance rate exceeded the national goal of 95 percent, as it has historically. The 2005 rate inched higher, reflecting more systems meeting health-based standards for bacteria.

- Of the 3.4 percent of public water systems reporting at least one violation of health-based standards, their elevated contaminant levels did not mean that people who drank the water got sick; it means users were exposed to what EPA has judged to be an unreasonable risk of illness, or that the system failed to treat its water to extent necessary.

  Bacterial contamination remained the top concern: 2.8 percent of systems had violations, potentially exposing 63,000 Wisconsinites to contaminants that can cause sudden illness.

  Radium was the second most common violation. Ten percent of Wisconsin residents are served by 45 public water systems that in 2005 reported radium levels in water exceeding health-based standards. Long-term exposure has been linked to increased risk of bone cancer.

  High nitrate levels was the third most common health-based violation in 2005. Common sources of nitrate include fertilizers, barnyard runoff, and septic systems.

- DNR drinking water staff helped assure safe drinking water in 2005 by **reviewing** hundreds of thousands of water sample results, i**nspecting** all municipal systems to short-circuit problems, providing **training** so that more than 98 percent of systems are run by certified operators, and **reviewing** construction plans for new water systems and improvements to existing facilities.

- DNR community financial assistance staff, working with drinking water staff, awarded **$70 million in low-interest loans** to communities in Fiscal Years 2005 and 2006 for construction projects to help them provide safe drinking water to consumers at low cost. New Auburn, Neenah, Menasha, Racine, Tomah, and Janesville were among those receiving loans. Depending on market interest rates, the savings to communities from the lower interest rates can equal 20 to 40 percent of the project cost.

- After the terrorist attacks of September 11, 2001, in New York City and Washington, D.C, DNR has been actively involved in assuring public water systems are secure from attack and are prepared to respond. In 2005, DNR and partners produced and distributed to police departments across Wisconsin a video to help familiarize them with drinking water supply facilities and to enable them to respond to potential vandal or terrorist attacks. DNR and partners also developed an emergency water sampling kit that has been distributed to water utilities and other locations.

Safe Drinking Water Act overview

Wisconsin, like the United States in general, enjoys some of the cleanest drinking water in the world. That people can turn on the tap, fill a glass, and drink it without thinking twice reflects the state's glacial legacy of abundant fresh water, strong state and federal regulations, and the cooperative efforts of water systems, trade associations, individual operators, and Department of Natural Resources staff.

Wisconsin and other states are required to report annually on how well public water systems – those which regularly serve at least 25 people 60 days of the year -- meet federal standards to provide citizens with safe drinking water.

Our state has 11,421 public water systems ranging from small restaurants and gas stations up to the largest cities such as Madison and Milwaukee. DNR's drinking water program oversees the systems' performance, including analyzing water sample results.

This report summarizes public water systems' performance as a whole between Jan. 1, 2005, and Dec. 31, 2005. It includes violations of requirements to test water quality and/or to report results, water samples containing contaminant levels exceeding safe drinking water standards, and failure to use proper treatment techniques. The report also details violations of public notice requirements, and of requirements to produce and distribute an annual report to water consumers.

This report also details DNR efforts to help systems provide safe drinking water. And it features a special section on radium, a naturally occurring cancer-causing contaminant found in water that generated a lot of headlines in 2005 and was the second most common violation of health-based standards reported by Wisconsin systems.

To learn about your water, or water served by another specific system, ask the system for its Consumer Confidence Report or generate one from DNR's online database: <http://dnr.wi.gov/org/water/dwg/ccr/ccr_instructions.htm>.

» More on radium: dnr.wi.gov/org/water/dwg/Forms/radium.pdf

Special focus: Radium in the news

Radium, a naturally occurring contaminant present for millennia in groundwater aquifers, has been very much in the news lately. Wisconsin has among the most public water systems with high radium levels. That prevalence reflects their reliance on groundwater, and high radium levels in the bedrock formations storing groundwater in southeastern and north central Wisconsin.

People exposed over their lifetime to drinking water with elevated radium levels run a greater risk of developing bone cancer. Ten percent of Wisconsin residents are served by 45 public water systems that exceed the radium standard. In some cases, the radium levels are three times the standards set to protect public health.

Communities have known about their elevated radium levels since the early 1980s, when they were first required to start monitoring for it and to notify consumers. EPA originally set the health-based standard for radium level at 5 picocuries per liter of water in 1976. That federal agency re-evaluated the information and concluded in 2000 that radium was a bigger health risk than first thought. But it reaffirmed the standard at 5 picocuries, a less stringent standard but still protective of public health and easier and less expensive for the public water systems to meet. Typically, EPA sets contaminant standards so that a lifetime exposure would result in 1 in 1 million people facing an increased risk, instead of the 1 in 10,000 used for radium.

Public water supplies across the nation were given until December 2003 to meet the radium standard. DNR received an extension to December 2006 to give Wisconsin communities more time to find the most cost-effective solution. Affected systems were required to continue notifying customers of the radium levels and risks so they could make an informed choice.

DNR officials and staff have been working closely with communities to help them find solutions to meet the extended deadline of December 2006. Drinking water specialists worked with 42 communities to develop consent agreements that outline steps the communities would take to meet the extended deadline. DNR has provided technical help and as of November 2006, more than $16 million in low-interest loans to help communities address their radium problems. Communities still failing to meet the 2006 deadline face referral to the Department of Justice.

Federal law sets requirements

Under the Safe Drinking Water Act, originally passed by Congress in 1972 and amended several times since, the U.S. Environmental Protection Agency has set national limits in drinking water for several groups of bacteriological and chemical contaminants. These limits, health-based standards known as Maximum Contaminant Levels, (MCLs) differ by contaminant.

Federal law also sets how frequently a public water system must test for these contaminants in their water and report results to the states or EPA. These testing or "monitoring" requirements vary according to system type, population served, vulnerability of the well to contamination, and results of previous sampling. In addition, EPA requires public water systems serving more than 10,000 people to monitor for some currently unregulated contaminants to help the agency gauge their prevalence and potential need for health-based standards for them.

State supervises local water systems

Under the Safe Drinking Water Act, states and territories may seek EPA approval to run their own programs to supervise local public water supply systems. States receiving the authority, or "**primacy,"** must adopt drinking water regulations that are at least as stringent as the federal regulations and demonstrate they can enforce the program requirements. Wisconsin has primacy, and the state's drinking water regulations are found in Natural Resources Chapter 809 of the Wisconsin Administrative Code.

DNR's Drinking Water and Groundwater staff are responsible for carrying out the drinking water program and overseeing public water system operation. They maintain an inventory, analyze results from water system sampling, and make sure the systems meet monitoring and reporting requirements. They also provide technical assistance to owners and operators, review construction plans for water systems, and coordinate formal enforcement to address significant violations when necessary. DNR staff also train system operators and help provide low-interest loans to communities to help them improve or expand their drinking water systems.

Four categories of public systems

Wisconsin's 11,421 active public water systems rank it second behind Michigan for the most public water systems. EPA and DNR define public water systems as those providing water for human consumption via piping to at least 15 service connections or regularly serving an average of at least 25 people a day for at least 60 days per year. There are four types of public water systems in Wisconsin:

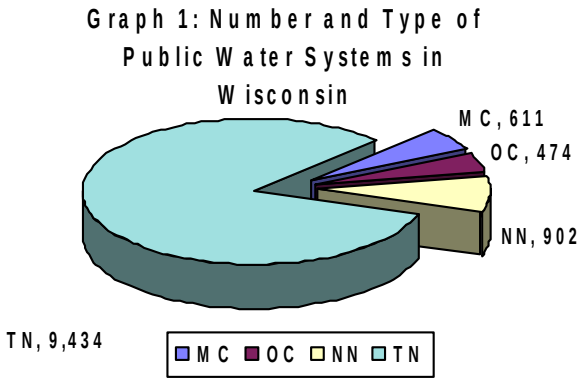
Municipal Community (MC) systems are owned by cities, villages and sanitary districts and regularly serve at least 25 year-round residents.

Other Than Municipal Community (OC) systems are not publicly owned but regularly serve at least 25 year-round residents. These include mobile home parks, apartment buildings, condo complexes.

Nontransient Noncommunity (NN) systems regularly serve at least 25 of the same people over six months of the year. These include schools, day care centers, and factories.

Transient Noncommunity(TN) systems serve at least 25 people at least 60 days of the year. These include motels, restaurants, parks, taverns, churches, and campgrounds.

While the 9,434 churches, taverns, restaurants and other entities in the Transient Noncommunity System category make it the largest, municipal water suppliers serve by far the most people, more than 60 percent of those receiving public water.



Water testing differs by system

The Safe Drinking Water Act mandates that public water systems collect water samples, test them, and report results to the state. The specific contaminants monitored for differ by water system type, size of population served, and whether the water is from aquifers or from a lake or river.

How frequently water samples are collected and tested depends on the system category, the contaminants' characteristics and their risk to human health. For example, bacteria and nitrate pose an immediate risk to human health – people can get sick after one glass of water contaminated with certain bacteria. So **all** systems must monitor for these **acute** contaminants, although the largest systems collect hundreds of water samples every month while the smallest systems test once a year.

Contaminants that pose a long-term health risk are called **chronic** contaminants. Their maximum permissible levels in water are typically set so that 1 in 1 million people would face an increased risk of developing cancer by drinking 2 liters of water a day for 70 years. Chronic contaminants are monitored less frequently, and the smallest systems, the "transient noncommunity systems," do not test for chronic contaminants. The categories of regulated contaminants are:

- Total coliform
- Nitrate
- Inorganics (IOCs);
- Volatile organic chemicals (VOCs);
- Synthetic organic chemicals (SOCs);
- Radionuclides
- Lead
- Copper
- Total trihalomethanes (disinfection byproducts)

Each category may include multiple contaminants: "synthetic organic chemicals," for instance, contains 30. Municipal systems, which test for the most contaminants, test for 80 different regulated contaminants to protect public health. They test for others for which EPA has set aesthetic standards to avoid an unpleasant smell, taste, appearance, or stained sinks or discolored clothes. EPA also may have systems test for unregulated contaminants, such as MTBE, to understand their prevalence nationally. Appendix A lists regulated contaminants and their health-based standards, or MCLs.

Leaking buried storage tanks are a major source of **volatile organic chemicals**; 59 different VOCs have been found in Wisconsin groundwater, which 99 percent of all public water systems tap.

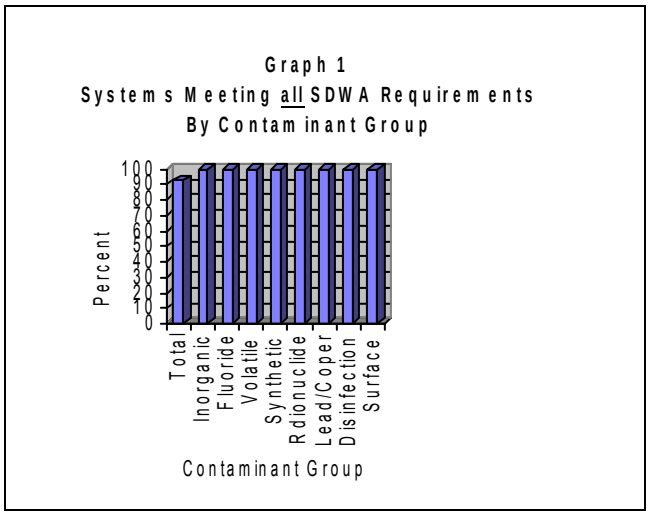
Pesticides and nitrates are other top threats to groundwater.

» Learn more about regulated contaminants, their health effects, and how they get in water:
http://www.wnrmag.com/supps/2006/apr06/threats.htm
http://dnr.wi.gov/org/water/dwg/pubbro.htm

2005 Compliance Rates Strong

In 2005 the vast majority of public water systems complied with all Safe Drinking Water Act requirements: collected required water samples, tested them for the appropriate contaminants, and reported them as required. They also used the right treatment technique and delivered to their consumers Consumer Confidence Reports.

As Graph 1 shows below, 99 percent of systems complied with all requirements for each of the major contaminant groups with the exception of total coliform, where 92.6 percent of all systems met all the requirements. Together, these results comprise an 88 percent compliance rate with all SDWA requirements. That rate has been pretty consistent since the 1980s, a good sign given that most systems are testing for more contaminants under new EPA requirements since that time.



The overall compliance rates, while very strong, revealed areas for improvement: the 45 systems that still haven't addressed elevated radium levels in more than 20 years of knowing about the problem.

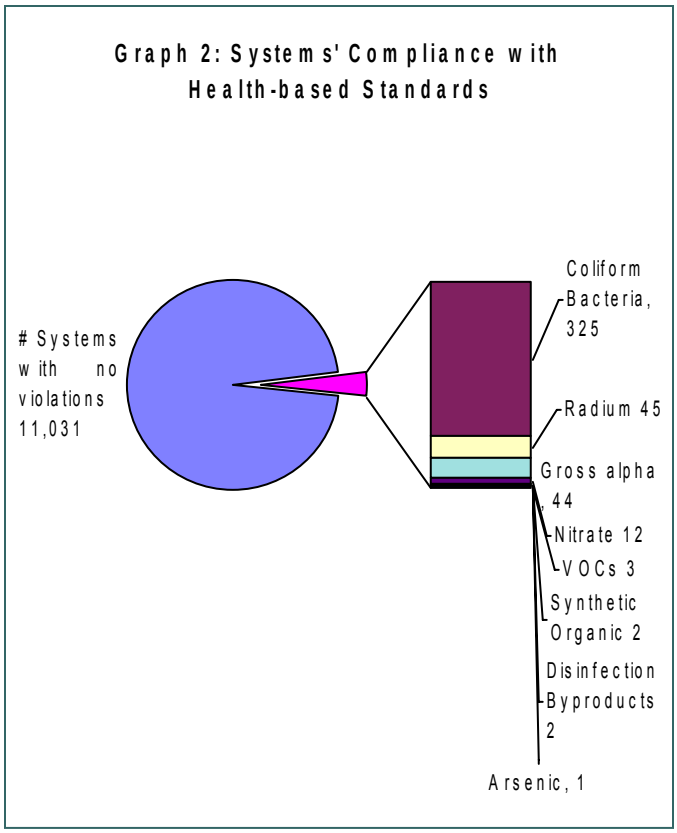
The second area needing improvement is monitoring and reporting by smaller water systems such as restaurants, churches, campgrounds and golf courses. Their failure to test and report is a concern because DNR and customers don't know what's in the water. Problems have persisted despite state efforts to expand training of operators for these small systems. Appendix B summarizes violations by system type and contaminant group.

Health-based Violation Summary

The most serious violations of the Safe Drinking Water Act occur when contaminants in water samples **exceed levels set to protect human health.** Such health-based violations mean that the drinking water contained levels of a particular chemical that exceeded the allowed maximum contaminant level, or MCL, for that contaminant. A violation of an MCL standard does not mean that people who drank the water got sick; it means users were exposed to what EPA has judged to be an unreasonable risk of illness, or that the system failed to treat its water to the extent judged necessary.

In the report year 96.6 percent of 11,421 systems served safe water that did not have a single water sample in which a regulated contaminant exceeded a standard.

The number of systems with water samples testing high for one or more contaminants was 3.4 percent, or 390 systems. Graph 2 illustrates the number of systems with such violations.



Health-based Violations

Bacterial violations top list again

In 2005, as in the past, the most violations resulted from elevated bacterial levels, although performance in this area improved from 2005. A total of 325 public water systems serving an estimated 63,000 people exceeded the maximum permissible level of coliform bacteria, a 2.8 percent unsafe rate. This compares to 393 systems with bacterial problems in 2004.

Coliform bacteria are microscopic organisms that can be found in human and animal waste, in soil, on plants, and in runoff. Coliform bacteria in water is an indicator that other bacteria, viruses and parasites that can make people sick may also be present. Such contaminants are a concern because people can get sick after just one exposure – one drink – to water containing some kinds of microorganisms. Conversely, systems can usually address the problem quickly.

The smallest public water systems, the transient noncommunity system category that includes motels, restaurants, parks, taverns, churches, and campgrounds, had the highest number of violations at 238, but the smallest percentage of violators among the four categories of water systems.

System Type	# Systems exceed bacteria Standards (MCLs)	% Systems exceed bacteria Standards (MCLs)
Municipally owned *(Cities, villages, sanitary districts)*	**30**	**4.9 %**
Other-than-Municipal *(mobile home parks, condo associations, etc.)*	**27**	**5.7 %**
Nontransient noncommunity *(Schools, factories day cares)*	**30**	**3.3 %**
Transient noncommunity *(Motels, taverns, restaurants, etc.)*	**238**	**2.5 %**
TOTAL	**325**	**2.8 %**

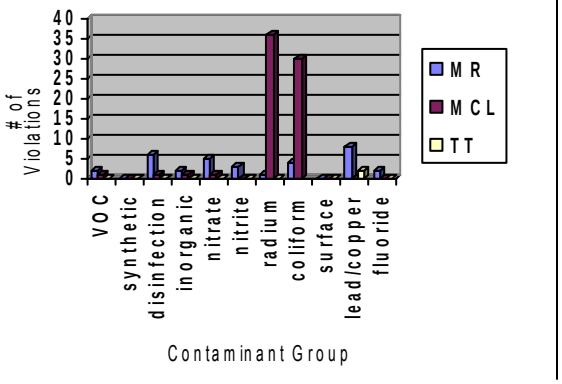
Radium second most frequent violation

Radium became the second most frequently reported violation in 2005 overall by all systems, but as Graph 4 shows below, it was by far the most frequent health-based violation reported by the largest water systems.

Fully 10 percent of Wisconsin residents are served by 45 public water systems that in 2005 reported naturally occurring radium levels in water exceeding health-based standards. Long-term exposure to elevated levels of radium in water has been linked to an increased risk of bone cancer. In some cases, the radium levels are three times the standards set to protect public health.

Graph 4: Violations by Contaminant Group for Municipal Systems

Total Number of MC Systems with Violations = 105



Nitrate levels remain a concern

Nitrate violations were the third most common health-based violation in 2005. Common sources include fertilizers, barnyard runoff, septic systems, and municipal sewage treatment systems. Nitrate-contaminated water should never be fed to infants under 6 months old because it can reduce the blood's ability to carry oxygen. In severe cases it can cause symptoms of suffocation, also called "blue baby syndrome," which can lead to coma and death if the child is not treated promptly.

Some scientific studies have also suggested that women who drink nitrate-contaminated water during pregnancy are more likely to have babies with birth defects. People who have heart or lung disease may also be more sensitive to the toxic effects of nitrate.

Monitoring and reporting violations

EPA specifies which water testing methods systems must use and sets schedules for testing frequency and reporting results. A system that does not follow EPA's schedule or methods incurs a violation.

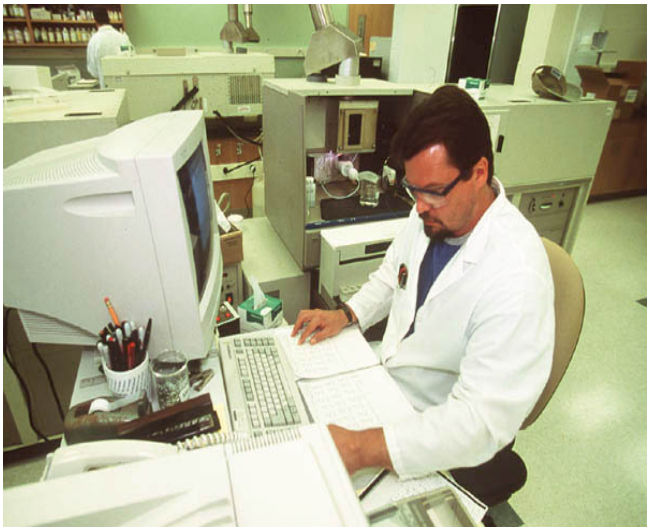
States must report significant monitoring violations —when no samples are taken or results are not reported during a compliance period. A major monitoring violation of the Surface Water Treatment Rule occurs when at least 90 percent of required samples aren't taken or results aren't reported. That rule sets criteria water for filtering and disinfection by systems drawing water from lakes or rivers, or groundwater directly influenced by lakes and rivers.

In 2005, as historically, municipal water systems and other-than municipal systems all did a very good job in this area: 99 percent complied with requirements. Transient water systems such as restaurants, churches and taverns also did a good job overall, but 4 percent failed to monitor for bacteria and 3 percent failed to sample for nitrate in 2005. These differences may reflect that transient water system owners may focus more on running their restaurant, campground or other business and less on their drinking water responsibilities.

Table 2 shows **all** violations by systems grouped according to whether they were for bacteriological or chemical contaminants. Some systems may have more than one violation for the same contaminants, and/or for different contaminants. In 2005, all systems collected 77,495 samples for analysis for bacteriological contaminants, with only 400 of those samples positive for such contaminants.

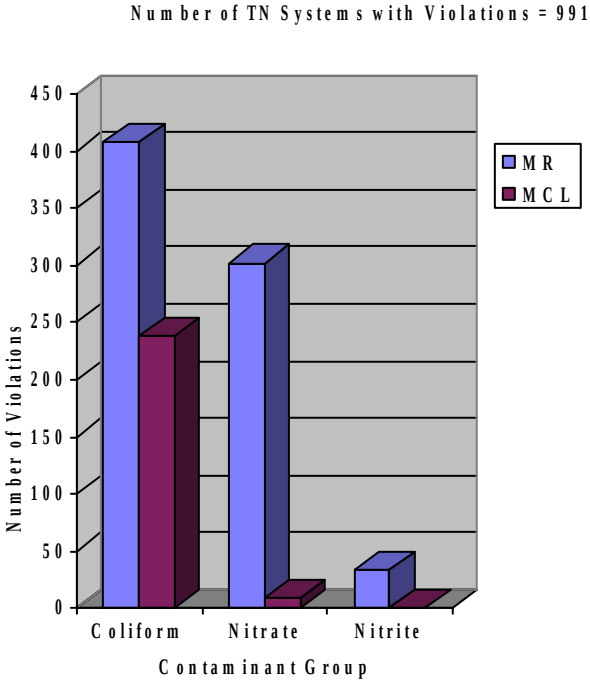
Table 2: Total Number of Violations

	Bacteriological		Chemical	
	# Violations	# Systems	# Violations	# Systems
Monitor/ Reporting	**650**	**519**	**1217**	**458**
Maximum. Contam. Level	**400**	**325**	**257**	**65**
Treatment Technique			**10**	**10**



States must report significant monitoring violations, which occur when no samples are taken, or results are not reported during a compliance period. The largest water systems have the best track record in this area.

Graph 4: Monitoring/Reporting and MCL Violations by Contaminant Group Transient Noncommunity (TN) Systems



Treatment technique violations

Treatment technique violations, TT, occur when a system fails to use a mandated process to reduce the level of a contaminant or reduce people's exposure to it. Such violations represent an increased risk that water with high levels of a particular contaminant will not get treated to the degree EPA has determined is necessary.

In 2005, public water systems reported 10 violations of treatment technology requirements. Nine of the 10 violations were for systems' failure to provide public education about reducing or avoiding lead exposure from drinking water.

Lead is a toxic metal which has been used in the construction of most household plumbing systems in Wisconsin. It's estimated that lead in drinking water contributes between 10 and 20 percent of total lead exposure in young children. The lead in drinking water is most likely lead pipe or solder in the house water supply plumbing or lead service lines which join buildings to water street mains. Excessive levels of lead can damage the brain, kidneys, nervous system, red blood cells and reproductive system.

Public notice violations

If a public water system exceeds a maximum contaminant level, fails to properly treat its water, or does not monitor according to the prescribed schedule, it must notify its customers and correct the problem. Public notification is required by federal and state regulations.

Public water system operators must inform their customers of the nature of the violation, what corrective actions are being taken, potential health effects, and any preventative measures consumers should take, including using bottled water or boiling their water. Public notices may include radio or television announcements, newspaper notices, door-to-door notification, or inserts in water bills. Public water systems that exceed a bacteriological MCL must notify the public within 24 hours.

In 2005, there were 1,224 violations of public notice requirements. By far, most of the public notice violations involved the failure to monitor for chronic chemicals, the lowest level of the three tiers of violations.

Consumer Confidence Report violations

All community water systems are required to provide customers with a Consumer Confidence Report (CCR) by July 1 of each year. The report outlines all water quality testing completed, the results, and any violations of safe drinking water requirements.

In 2005, the vast majority of community water systems met this reporting requirement: 1,054 of 1,085 systems, or 99 percent. That's greatly improved from the earliest years when the annual consumer report was required but nearly 20 percent of the systems failed to get their report to consumers on time.

What's in my water?

Wisconsin's largest public water systems must produce and send to customers every year a **Consumer Confidence Report** detailing contaminants in the water, health effects, and water treatment methods. If you didn't get a report, contact your water system or generate your own: <http://dnr.wi.gov/org/water/dwg/ccr/ccr_instructions.htm>.

Enforcement Actions

When public water systems violate state and federal regulations, DNR seeks to work with the system to resolve the problem as quickly and as informally as possible to protect public health. When the public water supply fails to correct the problem quickly, DNR drinking water staff take more formal action. In 2005, staff:

√ **Issued 1,418 Notices of Noncompliance**, which required the system to submit results within 90 days and to notify their consumers of the failure to monitor.

√ **Sent 62 notice of Violation letters requiring t**he system owner to appear at the regional drinking water office to meet with DNR drinking water and enforcement staff to discuss a compliance agreement spelling out the corrective actions and a timetable.

√ **Held 10 enforcement conferences and developed 12 compliance agreements** to get systems back in compliance and serving safe water.

DNR assistance in providing safe water

Larry Landsness, DNR water supply engineer, checks the integrity of a membrane filter that removes microbial contaminants at the Ashland water system.

Technical assistance

In addition to reviewing hundreds of thousands of water sample results, DNR drinking water staff inspect facilities, and provide technical help over the telephone, via e-mail and in person. If a system is having water quality problems, they contact the facility or visit the site to help the operator investigate the problem and suggest solutions. They also provide educational presentations and materials at operator training events.

On-site Help - In 2005, DNR staff conducted 2,719 in-depth inspections of the water source, facilities, equipment, operation and maintenance. Staff also performed 402 other on-site inspections and made special trips to 10 sites to help solve problems. Inspections are important prevention tools; they can help point out problems before a health-based violation occurs.

Vulnerability Assessments – Every three years, drinking water staff evaluate well construction and contamination sources at the three largest categories of public systems, those serving the same people most often. Based on this evaluation, DNR may reduce monitoring frequency of regulated contaminants if the system meets particular criteria. These reductions are granted for a limited time, and must be re-evaluated every three years, but they significantly reduce monitoring costs, saving Wisconsin systems more than $3 million per year.

Annual Monitoring Schedules - To promote timely contaminant monitoring and reporting, DNR sends monitoring letters and schedules to water system operators that outline all sampling that must be completed for that year, and send reminder postcards if they haven't submitted required results.

Water System Security— After the terrorist attacks of September 11, 2001, DNR has been actively involved in assuring public water systems are secure from attack and are prepared to respond. In 2005, DNR teamed up with the Wisconsin Department of Justice, Waukesha Water Utility and the Milwaukee Police Academy to produce and distribute to police departments a video to help familiarize them with drinking water supply facilities and to enable them to respond to potential vandal or terrorist attacks. Also in 2005, DNR and partners distributed an emergency water sampling kit to water utilities and other locations.

Also through federal funding available to help states protect themselves against terrorist attack, DNR has contracted with the Wisconsin Water Association and Wisconsin Rural Water Association to deliver training on security vulnerability assessments and emergency response plan development. DNR has developed educational materials to help water utilities establish a "neighborhood watch" program in their communities and worked with EPA to provide information to help community water systems evaluate their operations to decrease their vulnerability to accidental or intentional contamination. Finally, DNR has established a Security Alert communication system so systems may receive timely notification in case of risk.

Protecting drinking water at the source

More is known about potential threats to Wisconsin's drinking water than ever before thanks to DNR's completion in 2005 of an exhaustive effort to identify potential contaminant sources for all public water supplies. DNR officials hope the so-called "source water assessments" will spur local governments to work with interested citizens to develop source water/ wellhead protection plans. By the end of 2005, more than 270 communities had developed wellhead protection plans for at least one well.

Fond du Lac: on tap for low interest loans in '07.

Financial Assistance - DNR provided $70 million in low interest loans to municipal public water systems in Fiscal Years 2005 and 2006 for projects to help provide safe water for consumers at a low price. See Appendix D for a list. Since the first loans in 1998, 61 projects have received $196 million in loans. Depending on market interest rates, the savings to communities of the low interest rates can equal 20 to 40 percent of the project cost.

Racine used a $16.7 million, 2.4 percent interest loan from DNR in 2005 to help build a state-of-the art drinking water filtration plant. The plant produces 50 million gallons of water a day, and is the largest producer in the world using a particular membrane filter technology. The membrane filters serve as an extra barrier to further purify the water and protect consumers from Cryptosporidium, Giardia and other bacteriological contaminants.

Here are a few more examples from 2005-2006:

- **$** The Algoma Sanitary District used $4.8 million in loans to construct a new water system to serve homes with private wells with high arsenic levels.
- **$** Neenah and Menasha each received funding with a combined total of $21 million to build and/or rehab treatment systems to address bacteria and turbidity problems.
- **$** Suring and Seymour each received funding with a combined total of $1.6 million to help them build new wells, pumphouse and transmission mains to address arsenic.
- **$** The Village of New Auburn received nearly $900,000 to help replace an elevated storage tank with poor pressure that contributed to increased bacteria in water.

Education and information—DNR continues to work with professional trade organizations to provide basic training programs and continuing education classes that operators can take in person or online. DNR's focus on providing training for small system operators helped increase from 20 percent five years ago to more than 98 percent in 2005 the number of systems run by certified operators. DNR also provides to systems in hard copy and online handbooks on owner responsibilities, how to monitor properly, and public notification requirements if contaminant levels exceed a health-based standard.

Research— DNR wasn't able to fund any drinking water or groundwater research in 2005**.** However, the fruits of earlier DNR-funded research was reflected in new requirements aimed at protecting consumers from high arsenic levels. Based on research showing prevalence of naturally occurring arsenic, DNR identified areas where new wells must be constructed and disinfected according to more stringent standards. Another is a faster, more efficient method for analyzing water samples for Cryptosporidium, the parasite responsible for a waterborne disease outbreak in Milwaukee in 1993 that hospitalized more than 4,000 and contributed to 69 deaths.

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Copies of this report may be obtained by contacting the Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources, P.O. Box 7921, Madison, WI 53707, (608) 267-4230.

Appendix A

Maximum Permissible Contaminant Levels for Drinking Water

MCLs = Maximum Contaminant Levels allowed in water under standards set to protect human health.
M/R = Monitoring and Reporting Violations. Systems fail to collect water samples and/or fail to report results.
TT = Treatment Technique Violations. Systems fail to use required treatment technique.

INORGANIC COMPOUND	**MCL** (milligrams per liter or mg/L	**VOLATILE ORGANIC CONTAMINANTS**	**MCL** (mg/L)	**SYNTHETIC ORGANIC CONTAMINANTS**	**MCL** (mg/L)
Antimony	0.006	Benzene[1]	0.005	2,4-D	0.07
Arsenic	*0.05*	Carbon Tetrachloride[1]	0.005	2,4,5-TP	0.05
Asbestos (fiber length >10 microns)	7 million fibers per liter	o-Dichlorobenzene	0.6	Alachlor	0.002
Barium	2	p-Dichlorobenzene	0.075	Atrazine	0.003
Beryllium	0.004	1,2-Dichloroethane[1]	0.005	Benzo(a)pyrene	0.0002
Cadmium	*0.005*	1,1-Dichloroethlyene	0.007	Carbofuran	0.04
Chromium	0.1	1,2-Dichloroethylene,cis	0.07	Chlordane'	0.002
Cyanide	0.2	1,2-Dichloroethylene,trans	0.1	Dalapon	0.2
Fluoride	4.0	Dichloromethane	0.005	Di(2-ethylhexyl)adipate	0.4
Mercury	0.002	1,2-Dichloropropane[1]	0.005	Di(2-ethylhexyl)phthallate	0.006
Nickel	0.1	Ethylbenzene	0.7	Dibromochloropropane	0.0002
Nitrate	10	Chlorobenzene	0.1	Dinoseb	0.007
Nitrite	1	Styrene	0.1	Dioxin	$3x1^{-8}$
Total Nitrate & Nitrite	10	Tetrachloroethylene[1]	0.005	Diquat	0.02
Selenium	*0.05*	Toluene	1	Endothall	0.1
Thallium	0.002	1,2,4 Trichlorobenzene	0.07	Endrin	0.002
		1,1,1-Trichloroethane	0.2	Ethylene Dibromide	0.00005
Lead & Copper	**Action Level**	1,1,2 Trichloroethane	0.005	Glyphosate	0.7
Lead	0.015	Trichloroethylene[1]	0.005	Heptachlor	0.0004
Copper	1.3	Vinyl Chloride[1]	0.0002	Heptachlor epoxide	0.0002
		Xylenes (Total)	10	Hexachlorobenzene	0.001
Radionuclides	Picocuries per liter PCi/L			Hexachlorocyclopentadiene	0.05
Gross Alpha	15			Lindane	0.0002
Radium 226+228	5	**Disinfection Byproducts**		Methoxychlor	0.04
Uranium	30 ug/l	Total Trihalomethanes	0.080	Oxamy	0.2
		Haloacetic Acids	0.060	PCBs	0.0005
		Bromate	0.010	Pentachlorophenol	0.001
		Chlorite	1.0	Picloram	0.001
				Simazine	0.004
				Toxaphene	0.003

Appendix B

Number of Systems in Violation by System Type

Reporting period January 1, 2005 to December 31, 2005

MCLs = Maximum Contaminant Levels allowed in water under standards set to protect human health.
M/R = Monitoring and Reporting Violations. Systems fail to collect water samples and/or fail to report results.
TT = Treatment Technique Violations. Systems fail to use required treatment technique.

	Municipal			Other-than-municipal			Non-transient-Noncommunity			Transient-Noncommunity			All
	MCL	M/R	TT	MCL	M/R	TT	MCL	M/R	TT	MCL	M/R	TT	
TOTAL COLIFORM RULE	30	4	0	27	44	0	30	63	0	238	408	0	844
Nitrates	1	5		0	8		2	23		9	302		350
Nitrites	0	3		0	0		0	8		0	34		45
Fluoride	0	2		0	0		0	0		0			2
Inorganic chemicals	1	2		0	1		0	6		0			10
VOCs	1	2		0	3		2	15		0			23
Synthetic Organic chemicals	0	0		0	1		2	1		0			4
Radionuclides	36	1		9	0		0			0			46
Lead/Copper Rule	0	8	2	0	7	1	0	20	7	0			45
Surface Water Treatment Rule	0	0	0	0	0	0	0			0			0
Disinfection Byproducts	1	6		1	0		0	0		0			8
TOTAL VIOLATIONS	70	33	2	37	64	1	36	136	7	247	744		1377

Appendix C

Drinking Water Violations by Contaminant Group

Reporting period January 1, 2005 to December 31, 2005

VOLATILE ORGANIC CONTAMINANT	MCL (mg/L)	Max. Contaminant Levels		Treatment Technique		Significant Monitoring/ Reporting	
		Number of Violations	Number of Systems In Violation	Number of Violations	Number of Systems In Violation	Number of Violations	Number of Systems In Violation
Benzene[1]	0.005	0	0	0	0	24	20
Carbon Tetrachloride[1]	0.005	0	0	0	0	24	
o-Dichlorobenzene	0.6	0	0	0	0	24	
p-Dichlorobenzene	0.075	0	0	0	0	24	
1,2-Dichloroethane[1]	0.005	1	1	0	0	24	
1,1-Dichloroethlyene	0.007	0	0	0	0	24	
1,2-Dichloroethylene,cis	0.07	0	0	0	0	24	
1,2-Dichloroethylene,trans	0.1	0	0	0	0	24	
Dichloromethane	0.005	1	1	0	0	24	
1,2-Dichloropropane[1]	0.005	0	0	0	0	24	
Ethylbenzene	0.7	0	0	0	0	24	
Chlorobenzene	0.1	0	0	0	0	24	
Styrene	0.1	0	0	0	0	24	
Tetrachloroethylene[1]	0.005	1	1	0	0	24	
Toluene	1	0	0	0	0	24	
1,2,4 Trichlorobenzene	0.07	0	0	0	0	24	
1,1,1-Trichloroethane	0.2	0	0	0	0	24	
1,1,2 Trichloroethane	0.005	0	0	0	0	24	
Trichloroethylene[1]	0.005	0	0	0	0	24	
Vinyl Chloride[1]	0.0002	0	0	0	0	24	
Xylenes (Total)	10	0	0	0	0	24	
Disinfection By products DBP	80	0	0	0	0	6	6
TOTALS		**3**	**3**	**0**	**0**	**510**	**26***

* The same 20 water systems each had at least 1 violation for each contaminant within the VOC category. When calculating the total number of systems in violations, systems with violations of multiple contaminants in the same group are only counted once.

Appendix C

Drinking Water Violations by Contaminant Group

Reporting period January 1, 2005 to December 31, 2005

SYNTHETIC ORGANIC CONTAMINANTS	MCL (mg/L)	MCLs		Treatment Technique		Significant Monitoring/ Reporting	
		Violations	Systems In Violation	Violations	Systems In Violation	Violations	Systems In Violation
1,2 Dibromo-3-Chloropropane (DBPC)	0.0002	0	0	0	0	3	2
2,3,7,8-TCDD (Dioxin)	$3x10^{-8}$	0	0	0	0	3	2
2,4-D	0.07	0	0	0	0	3	2
2,4,5-TP	0.05	0	0	0	0	3	2
Alachlor	0.002	0	0	0	0	3	2
Atrazine	0.003	0	0	0	0	3	2
Benzo(a)pyrene	0.0002	0	0	0	0	3	2
Carbofuran	0.04	0	0	0	0	3	2
Chlordane'	0.002	0	0	0	0	3	2
Dalapon	0.2	0	0	0	0	3	2
Di(2-ethylhexyl) adipate	0.4	0	0	0	0	1	1
Di(2-ethylhexyl) phthallate	0.006	3	2	0	0	1	1
Dinoseb	0.007	0	0	0	0	3	2
Diquat	0.02	0	0	0	0	3	2
Endothall	0.1	0	0	0	0	3	2
Endrin	0.002	0	0	0	0	3	2
Ethylene Dibromide	0.00005	0	0	0	0	3	2
Glyphosate	0.7	0	0	0	0	3	2
Heptachlor	0.0004	0	0	0	0	3	2
Heptachlor epoxide	0.0002	0	0	0	0	3	2
Hexachlorobenzene	0.001	0	0	0	0	3	2
Hexachlorocyclopentadiene	0.05	0	0	0	0	3	2
Lindane	0.0002	0	0	0	0	3	2
Methoxychlor	0.04	0	0	0	0	3	2
Oxamyl	0.2	0	0	0	0	3	2
PCBs	0.0005	0	0	0	0	3	2
Pentachlorophenol	0.001	0	0	0	0	3	2
Picloram	0.001	0	0	0	0	3	2
Simazine	0.004	0	0	0	0	3	2
Toxaphene	0.003	0	0	0	0	3	2
TOTALS		**3**	**2**	**0**	**0**	**86**	**2***

*The same two systems had violations of all the contaminants within the "Synthetic Organic Chemicals" category with the exception of two chemicals. When calculating the total number of systems in violation, systems are only counted once for violations of multiple contaminants within the same contaminant group.

Appendix C (continued)

Drinking Water Violations by Contaminant Group

Reporting period January 1, 2005 to December 31, 2005

INORGANIC COMPOUND	MCL (mg/L)	MCLs		Treatment Technique		Significant Monitoring/ Reporting	
		Violations	Systems in Violation	Violations	Systems in Violation	Violations	Systems In Violation
Antimony	0.006	0	0	0	0	9	9
Arsenic	*0.05*	1	1	0	0	12	9
Asbestos (fiber length > 10 microns	7 million. fibers per liter	0	0	0	0	9	9
Barium	2	0	0	0	0	9	9
Beryllium	0.004	0	0	0	0	9	9
Cadmium	0.005	0	0	0	0	9	9
Chromium	0.1	0	0	0	0	9	9
Cyanide	0.2	0	0	0	0	9	9
Fluoride	4.0	0	0	0	0	2	2
Mercury	0.002	0	0	0	0	9	9
Nickel	0.1	0	0	0	0	9	9
Nitrate	10	12	12	0	0	367	332
Nitrate-Nitrite	10	0	0	0	0	9	9
Nitrite	1	0	0	0	0	45	45
Selenium	0.05	0	0	0	0	9	9
Sodium		0	0	0	0	9	9
Thallium	0.002	0	0	0	0	9	9
TOTALS		**13**	**13**	**0**	**0**	**550**	**388**

To calculate the total number of systems in violation, systems are only counted once for violations of multiple contaminants within the same contaminant group.

Appendix C (continued)

Drinking Water Violations by Contaminant Group

Reporting period January 1, 2005 to December 31, 2005

	MCL (mg/L) Or Action Level	Maximum Contaminant Levels (MCLs)		Treatment Technique		Significant Monitoring/ Reporting	
		Violations	**Systems in Violation**	**Violations**	**Systems In Violation**	**Violations**	**Systems In Violation**
Lead	0.015	N/A	N/A	10	10	35	35
Copper	1.3	N/A	N/A	10	10	35	35
TOTALS				**20**	**10**	**70**	**35**
Radionuclides	Picocuries per liter						
Gross Alpha	15	137	44	0	0	1	1
Radium 226+228	5	101	45	0	0	0	0
TOTALS		**238**	**45**	**0**	**0**	**1**	**1**
Total Coliform Rule	No Detect	400	325	0	0	650	519
TOTALS		**400**	**325**	**0**	**0**	**650**	**519**

To calculate the total number of systems in violation, systems are only counted once for violations of multiple contaminants within the same contaminant group.

Appendix D

Communities Receiving Low-Interest Loans for Drinking Water Projects

Fiscal Years 2005-2006 **(** *July 1, 2004 to June 31, 2006*)

Municipality	County	Loan Amount	Project Description
Thorp, City of	Clark	$1,198,085	Construct Wells #13 & #14, ground level storage tank, booster pump station; Upgrade treatment plant at Well #9 to reduce radon and/or uranium at Wells #11 and #12
Tomah, City of	Monroe	$1,155,585	Construct Well #12, including pump house, water main & sanitary sewer connections
Algoma Sanitary District #1, Town of	Winnebago	$2,281,784	New municipal water system (Phase II - Well #2, treatment facility & water main)
Greenville Sanitary District #1,Town of	Outagamie	$1,642,477	Construct Well #4, including masonry bldg, well pump, pressure aerators & underground tanks
Neenah Water Utility, City of	Winnebago	$16,666,667	Construct new water treatment plant
Racine, City of	Racine	$16,666,667	Construct a hybrid membrane-adsorption treatment process
Janesville, City of	Rock	$2,150,000	Ground level reservoir, deep well & booster station
Union Grove, Village of	Racine	$1,511,624	Construct zeolite softening at Wells #4 and #5 to reduce radium
New Auburn, Village of	Chippewa	$832,266	Replace elevated tank & upgrade watermains
Neenah, City of	Winnebago	$9,723,300	Construct new water treatment plant
Menasha, City of	Winnebago	$12,061,890	Construct new filtration system, Cargon contactors & UV disinfection
Suring, Village of	Oconto	$839,741	Construct well, station & transmission main
Seymour, City of	Outagamie	$708,225	Upgrade well #3, pumphouse & water system
Algoma Sanitary District No. 2	Winnebago	$2,561,354	Expand distribution system